

Mathematics Policy

1 Aims and objectives

1.1 Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

1.2 Our aims for Maths are to develop:

- a growth mindset and a positive attitude towards Maths and an ability to learn
- confidence and competence with numbers and the number system and other mathematical knowledge, concepts and skills
- the ability to solve problems through reasoning, thinking logically, working systematically and applying their mathematical knowledge
- the ability to communicate using mathematical language

2 Teaching and learning style

2.1 Ravenscroft uses a variety of teaching and learning styles in mathematics lessons. Our aim is to develop the children's mathematical knowledge, skills and understanding. We do this through a daily lesson that has a high proportion of whole-class and group-direct teaching. During these lessons we encourage children to ask as well as answer mathematical questions. Children also receive three weekly basic skills sessions that focus on number and place value. These take place either before, after or outside of the maths lessons. We aim to develop a deeper understanding of the concepts and skills covered by asking them to show, prove and explain their understanding in a variety of ways. Children are able to access resources independently to support their work. As a school, we use number lines, place value counters, base ten, digit cards and calculation mats. The bar model is used throughout the school as a strategy for problem solving. We look for ways to connect their learning within the maths lessons and across the curriculum.

2.2 Staff at Ravenscroft have high expectations of all children, irrespective of ability, and encourage them to be successful and achieve their full potential. Our aim is to ensure challenge for all. We aim to develop resilience and the '**have a go**' approach by equipping children with 3 ways to independently seek support by 1) Using the working wall 2) Using a pictorial representation or the bar model 3) talking to a partner. Support is also given to children through direct adult intervention, the use of concrete materials and adaptation of task. Teachers assess children regularly and plan for same day or next day intervention. Children who grasp concepts rapidly, are moved quickly onto more challenging tasks so that they are able to apply their learning and gain a deeper understanding. We do this by providing opportunities to complete missing box questions, connecting their learning to measures and giving the children word problems.

3 Mathematics curriculum planning

Mathematics is a core subject in the National Curriculum. Planning is based upon the new National Curriculum (2014). Programmes of Study are used to inform medium-term planning and subsequently, weekly planning.

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- 3.1** We carry out the curriculum planning in mathematics in three phases (long-term, medium-term and short-term). The National Curriculum Programmes of Study for each year group, give a detailed outline of what we teach in the long term (a long term plan was agreed with all staff to focus on number, place value and the four operations in the Autumn Term) while our yearly teaching programme identifies the key objectives in mathematics that we teach in each year.
- 3.2** Our medium-term mathematics plans, which give details of the main teaching objectives for each term, define what we teach. They ensure an appropriate balance and distribution of work across each term. These plans are reviewed by the subject leader.
- 3.3** It is the class teacher who completes the weekly plans for the teaching of mathematics. These weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught. The class teacher keeps these individual plans, and the class teacher and subject leader often discuss them on an informal basis.

We follow a mastery approach to develop the confidence and competency of all children. Teachers plan small carefully sequenced small steps so that children master these before moving onto the next stage. Fundamental skills and knowledge are planned for first as well as fluency before rich and sophisticated problems are offered.

All lessons begin with a '**hook**' giving the children the opportunity to reason and problem solve. Hooks are planned carefully so that children are able to build on previous skills and make connections between their Math's learning.

3.4 We also have a long term plan for the teaching and assessment of times tables. This begins in reception and each stage, throughout the school, has an assessment and Bronze, Silver and Gold awards.

The Mastery Approach:

- A detailed, structured curriculum is mapped out across all phases, ensuring continuity and supporting transition (e.g. Y1 continue with the Mastering Number Programme in the Autumn Term).
- Concrete and pictorial representations of mathematics are chosen carefully to help build procedural and conceptual knowledge together
- Exercises are structured with great care to build deep conceptual knowledge alongside developing procedural fluency
- Focus on the ability to make connections. Making these connections deepens knowledge, concepts and procedures, ensures the learning is sustained over time, and reduces the time required to master later concepts and techniques.

Working walls

All classrooms have clear working walls where models, worked examples, vocabulary and visual images used in previous lessons are displayed and referred to. Basic skills objectives are also displayed on these walls. Children use the wall to support their work.

Marking

Where possible, we encourage teachers to live mark and offer feedback and support in wither the same lesson or that day. The quality of marking is crucial. All work is marked regularly to show the children where they have succeeded and where errors have been made. Children are also given further challenges through asking the children to prove it with the inverse, explain their thinking and showing their answer in another way. Children are given time to respond to marking.

4 The Foundation Stage

4.1 We teach mathematics in our Nursery and Reception classes. We relate the mathematical aspects of the children's work to the objectives set out in the EYFS Framework. This underpins curriculum planning for children aged three to five.

We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

EYFS follow the Mastering Number Programme as well as introducing some of the models and sentence stems that are used throughout the rest of the school.

5 Contribution of mathematics to teaching in other curriculum areas

5.1 English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, we encourage children to read and interpret problems in order to identify the mathematics involved. The children explain and present their work to others during plenary sessions. Younger children enjoy stories and rhyme that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts.

5.2 Information and communication technology (ICT)

Children use and apply mathematics in a variety of ways when solving problems using ICT. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results or when creating repeating patterns, such as tessellations. When working on control, children use standard and non-standard measures for distance and angle. They use simulations to identify patterns and relationships. (For example using Logo.)

5.3 Personal, social and health education (PSHE) and citizenship

Mathematics contributes to the teaching of personal, social and health education, and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present older children with real-life situations in their work on the spending of money.

5.4 Spiritual, moral, social and cultural development

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work together, and we give them the chance to discuss their ideas and results.

5.5 Links with other curriculum areas

As stated in the National Numeracy Strategy (DfEE, Crown 3/99) *“Mathematics contributes to many subjects of the primary curriculum, often in practical ways.”* And that *“The key to making the most of all these opportunities is to identify the mathematical possibilities across the curriculum at the planning stage.”*

At Ravenscroft, we are aware of the importance of making these links and talk about them frequently both in mathematics and in other lessons. For example classifying, counting and measuring in Science; patterns and properties of shapes in Art; collecting data and passage of time in History; etc.

6 Teaching mathematics to children with special needs

- 6.1** We teach mathematics to all children, whatever their ability. It is part of the school curriculum policy to provide a broad and balanced education to all children. We provide learning opportunities that are matched to the needs of children with learning difficulties. Work in mathematics takes into account the targets set for individual children in their Personal Provision Plans (PPP's) Support is also given to children through direct adult intervention, the use of concrete materials and adaptation of task. Teachers assess children regularly and plan for same day or next day intervention. (For further information refer to SEN policy.)

7 Assessment and recording

- 7.1** We assess children's work in mathematics from three aspects (long-term, medium-term and short-term). Assessment of pupils' learning is ongoing by the class teacher and informs future planning. These short-term assessments are closely matched to the teaching objectives and inform the type of intervention required.

We make medium-term assessments to measure progress against the key objectives, and to help us plan the next unit of work.. Teachers make assessments at the end of each term, using NFER assessments in KS2 as well as teacher assessments using the 5 point scale.

We make long-term assessments towards the end of the school year, and we use these to assess progress against school and national targets. We are able to use the long-term assessments to set targets for the next school year. A summary of each child's progress is completed each year in the form of a written report (July). We pass information on to the next teacher at the end of the year, so that s/he can plan for the new school year. We make the long-term assessments with the help of end-of-year tests and teacher assessments. Children in Foundation Stage are assessed in accordance with the EYFS Curriculum. We use the national tests for children in Year 2 and Year 6, plus the optional national tests for children at the end of Years 3, 4 and 5.

- 7.4** At the end of each year every child has there end of year test placed in their record of achievement including the End of Key Stage Tests. Teachers meet regularly to review individual examples of work against the national exemplification material produced by the DfEE.

8 Monitoring and review

Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the mathematics subject leader. The work of the mathematics subject leader also involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. The mathematics subject leader gives the head teacher an annual summary in which s/he evaluates strengths and weaknesses in the subject and indicates areas for further improvement. The head teacher allocates regular management time to the mathematics subject leader so that s/he can review samples of children's work and undertake lesson observations of mathematics teaching across the school.

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